

CLAIMS

1. Human β TrCP protein (h- β TrCP) for the targeting of proteins towards proteasome degradation pathways, characterized in that it has SEQ ID No. 2.

2. Protein according to claim 1, characterized in that it has WD units and is capable of interacting with proteins degradable by proteasome, especially those which possess the phosphorylation unit comprising the amino acids Asp-Ser-Glu-Xaa-Xaa-Ser, in which Xaa is any natural amino acid and the serine residues are phosphorylated.

a 3. Protein according to claim 1 or 2, characterized in that it has WD units and is capable of interacting with the Vpu protein of HIV-1 virus or with the cell proteins I κ B or β -catenin.

a 4. Protein according to claim 1, characterized in that it has an F-box and is capable of interacting with the Skp1p protein.

a 5. Protein according to claim 1 or 2, characterized in that it comprises the following units:

- F-box: amino acids 147-191,
- first WD unit: amino acids 259-292,
- second WD unit: amino acids 304-332,
- third WD unit: amino acids 343-372,
- fourth WD unit: amino acids 387-415,
- fifth WD unit: amino acids 427-455,
- sixth WD unit: amino acids 467-492,
- seventh WD unit: amino acids 516-544.

6. Peptide fragments of the protein according to any one of claims 1 to 5 which result from the addition, deletion and/or replacement of one or more amino acids, said peptide fragments having conserved the activity of interacting with the Vpu protein of HIV-1, the cell protein I κ B or the cell protein β -catenin and/or with the Skp1p protein.

7. Nucleic acid sequences coding for the human protein h- β TrCP and the peptide fragments according to any one of claims 1 to 6, characterized in that they consist of:

- a) the DNA sequence SEQ ID No. 1 and the DNA sequences of the nucleic acid fragments coding for said peptide fragments;
- b) the DNA sequences which hybridize under strict conditions with the above

- sequences or one of its fragments;
- c) the DNA sequences which, due to the degeneracy of the genetic code, result from the sequences a) and b) above and code for the human protein h- β TrCP or fragments thereof; and
- d) the corresponding mRNA and DNA sequences.
8. Use of the h- β TrCP protein or the peptide fragments according to any one of claims 1 to 6 for the screening of anti-HIV-1 antiviral agents capable of inhibiting the interaction between the h- β TrCP protein and the Vpu protein.
9. Use of the h- β TrCP protein or the peptide fragments according to any one of claims 1 to 6 for the screening of anti-HIV-1 antiviral agents capable of inhibiting the interaction between the h- β TrCP protein and the Skp1p protein.
10. Use of the nucleic acid sequences according to claim 7 for the screening of anti-HIV antiviral agents capable of inhibiting the interaction between the h- β TrCP protein and the Vpu protein.
11. Use of the nucleic acid sequences according to claim 7 for the screening of anti-HIV antiviral agents capable of inhibiting the interaction between the h- β TrCP protein and the Skp1p protein.
12. Use of the h- β TrCP protein or the peptide fragments according to any one of claims 1 to 6 for the screening of antitumoral agents capable of perturbing the regulation of the cell cycle or the protein degradation processes in tumoral human cells by modulating the interaction between the h- β TrCP protein and the Skp1p protein.
13. Use of the nucleic acid sequences according to claim 7 for the screening of antitumoral agents capable of perturbing the regulation of the cell cycle or the protein degradation processes in tumoral human cells by modulating the interaction between the h- β TrCP protein and the Skp1p protein.
14. Use of the h- β TrCP protein or the peptide fragments according to any one of claims 1 to 6 for the screening of anti-inflammatory agents capable of perturbing activation of the NF κ B transcription factor by inhibiting the interaction between the h- β TrCP protein and the I κ B protein.
15. Use of the nucleic acid sequences according to claim 7 for the screening of anti-inflammatory agents capable of perturbing activation of the NF κ B transcription factor by inhibiting the interaction between the h- β TrCP protein and the I κ B protein.
16. Use of the h- β TrCP protein or the peptide fragments according to any one

of claims 1 to 6 for the screening of antitumoral agents capable of reactivating the interaction between the h- β TrCP protein and a mutated β -catenin protein in tumoral cells, or between h- β TrCP and normal β -catenin in tumoral cells devoid of the APC protein.

17. Use of the nucleic acid sequences according to claim 7 for the screening of antitumoral agents capable of reactivating the interaction between the h- β TrCP protein and the mutated β -catenin protein in tumoral cells, or between h- β TrCP and normal β -catenin in tumoral cells devoid of the APC protein.

18. Use of the h- β TrCP protein or the peptide fragments according to any one of claims 1 to 6 for the screening of anti-Alzheimer agents capable of reducing the degree of degradation of β -catenin by inhibiting the interaction between the h- β TrCP protein and the β -catenin protein.

19. Use of the nucleic acid sequences according to claim 7 for the screening of anti-Alzheimer agents capable of reducing the degree of degradation of β -catenin by inhibiting the interaction between the h- β TrCP protein and the β -catenin protein.

20. Use of the h- β TrCP protein or the peptide fragments according to any one of claims 1 to 6 for the detection of β -catenin mutations by yeast two-hybrid screening.

21. Use of the nucleic acid sequences according to claim 7 for the detection of β -catenin mutations by yeast two-hybrid screening.

22. Anti-HIV antiviral agents which consist of the peptide fragments of the h- β TrCP protein according to claim 4, devoid of the F-box.

23. Anti-HIV antiviral agents which consist of the peptide fragments of the h- β TrCP protein according to claim 7, devoid of the WD units.

24. Antibodies directed against the h- β TrCP protein ^{as defined in claim 1} or peptide fragments thereof ~~defined in any one of claims 1 to 6~~.

25. Antisense oligonucleotides which block the transcription or translation of the h- β TrCP protein according to ^{claim 1} ~~any one of claims 1 to 6~~ and which hybridize with a nucleic acid sequence ^{coding for human protein h- β TrCP or peptide fragments thereof} ~~according to claim 7~~.

26. Antitumoral agents which consist of the peptide fragments of the h- β TrCP protein according to claim 7 and which possess the F-box.

27. Antitumoral agents which ~~consist of~~ the peptide fragments of the h- β TrCP protein according to claim 7 and which have conserved both the WD units and the F-box.

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28. Anti-inflammatory agents which consist of the peptide fragments of the h- β TrCP protein according to claim 7, devoid of the F-box.
29. Transgenic mice which express a transgene for the h- β TrCP protein according to ^{claim 1} ~~any one of claims 1 to 6~~.
30. Transgenic mice in which the β TrCP gene has been invalidated.
31. Expression vector, characterized in that it comprises a nucleic acid sequence according to claim 7 and the means necessary for its expression.
32. Microorganisms or host cells transformed by an expression vector according to claim 31.
33. Microorganisms or host cells cotransformed by an expression vector containing the gene coding for the Vpu protein and by an expression vector according to claim 31.
34. Microorganisms or host cells cotransformed by an expression vector containing the gene coding for the Skp1p protein and by an expression vector according to claim 31.
35. Microorganisms or host cells cotransformed by an expression vector containing the gene coding for the I κ B protein and by an expression vector according to claim 31.
36. Microorganisms or host cells cotransformed by an expression vector containing the gene coding for the oncogenic β -catenin protein and by an expression vector according to claim 31.

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